

**HIGH VOLTAGE
ELECTRICIAN
WG-2810-10**

**UTILITIES
ELECTRICAL**

I. POSITION AND ORGANIZATION INFORMATION**Position:**

High Voltage Electrician, WG-2810-10

Purpose of position:

The high voltage electrician installs, maintains, and repairs electric power controlling equipment and/or distribution lines.

~~**Organization:**~~

Building Trades Br., Maintenance Div.

Organization goals:

The purpose of this branch is to provide emergency and scheduled maintenance and repair services.

II. MAJOR DUTIES**A. Duty (Critical):**

Employee installs, troubleshoots, tests, repairs, and maintains high voltage generating, controlling, and distributing systems in powerhouses, substations, and underground and overhead power lines. (100%)

Tasks:

1. From work orders, oral instructions, and circuit diagrams, analyzes operation of transformers, rotary converters, power control devices and related equipment. Records readings and observations, and compares them with standards. Cleans, makes appropriate adjustments and repairs as needed. Installs, alters, and replaces generation and distribution equipment.
2. From results of system analysis or in anticipation of load changes, closes, disconnects, parallels or effects substitution for electric components, electric units and conductors, coordinating operations with switchboard operator, and makes changes in such manner and sequence as to avoid danger, damage and unnecessary interruptions of service. Makes emergency cut outs and substitutions in the event of breakdowns or necessity for extensive repair.
3. Frequently works on high voltage electrical systems when they are "hot", using necessary safety equipment, methods, and precautions. May operate generators with both manual and automatic controls, and with gas and diesel prime movers.
4. Cleans and adjusts electrical control equipment such as air and oil circuit breakers and starters, and remote controlled switch gear. Adjusts relays and control equipment to obtain specified voltage, current, time delay, and other characteristics for appropriate holding, tripping, or other operational functions.
5. Calibrates watt hour meters, ammeters, synchroscopes, and similar devices, comparing them with various control instruments and published standards. Makes tests on oil used in oil circuit breaker and performs other

preventive maintenance tests or adjustments as required to keep equipment operating efficiently.

6. Troubleshoots distribution circuits and generating and controlling equipment to locate and correct the causes of outages and improper operation.

7. Visually checks the work of contractors for compliance with contract specifications on new constructions.

8. Provides guidance and training to lower graded employees.

Selected Staffing KSAs:

A1, A2, A3, A4, A5, A6, A7, A8, A9, A10

B. Other Work Requirements

1. The employee may be required to work overtime on an emergency basis.
2. This position requires the employee to drive a motor vehicle. An appropriate, valid driver's license is required for the position.

III. KNOWLEDGES, SKILLS AND ABILITIES (KSAs)

A. Selected Staffing KSAs:

1. Ability to do the work of the position without more than normal supervision
2. Ability to work with high voltage electrical equipment
3. Comprehensive knowledge of theory and instruments applied in high voltage electrical practices
4. Ability to interpret schematics, wiring diagrams, technical manuals, and other instructions
5. Skill in using and maintaining hand tools and powered equipment used in the electrical trade
6. Knowledge of safety procedures of high voltage work, including what equipment to use when working with live circuits
7. Ability to troubleshoot complex electrical problems associated with high voltage equipment
8. Ability to demonstrate reliability and dependability in working with high voltage equipment
9. Ability to follow directions in a high voltage shop
10. Ability to use the dexterity required to perform electrician duties in a high voltage environment

B. Basic Training Competencies:

1. Ability to do the work of the position without more than normal supervision
2. Ability to work with high voltage electrical equipment
3. Comprehensive knowledge of theory and instruments applied in high voltage electrical practices
4. Ability to interpret schematics, wiring diagrams, technical manuals, and other instructions
5. Skill in using and maintaining hand tools and powered equipment used in the electrical trade
6. Knowledge of safety procedures of high voltage work, including what

equipment to use when working with live circuits

7. Ability to troubleshoot complex electrical problems associated with high voltage equipment
8. Ability to demonstrate reliability and dependability in working with high voltage equipment
9. Ability to follow directions in a high voltage shop
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IV. CLASSIFICATION FACTORS

Factor 1. Knowledge

1. - Comprehensive knowledge of electrical theory such as power factor, transformers, series and parallel circuits, line loading, line losses, and dielectric or conductive properties of material.
- Knowledge of the National Electric Safety Code and of types and sizes of wires/cables, conduits, transformers, and other electrical equipment and circuit elements, and the skill to integrate them into electrical systems and equipment to insure proper operation.
 - Ability to install, maintain, and repair commonly used electric power generating and distributing equipment, e.g., true commutators and slip rings, replace and adjust contacts and tripping and time delay intervals of circuit breakers, determine types and sizes of wire, conduit, transformers, etc., and methods of installation and repair.
 - Skill in using test equipment and tools of the trade, e.g., ammeters, voltmeters, meggers, graphic recorders, dressing tools, etc.
 - Knowledge of safety procedures of high voltage work, including what equipment to use when working on live circuits.

Factor 2. Responsibility

The Electrician (High Voltage) performs all assigned tasks on own responsibility according to instructions from the supervisor. Plans work sequences, and selects tools and materials needed to complete assignments. Determines nature of maintenance or repair needed, judges effects that alterations have on the total system, and insure lines and equipment function properly. Work is subject to review while in progress and upon completion for compliance with instruction. Employee is responsible for the use and safekeeping of tools, materials and equipment. May be responsible for providing assistance to lower grade crew members.

Factor 3. Physical Effort

The employee frequently performs moderately heavy lifting, pulling, and carrying of equipment and material weighing up to 18 kilograms (40 pounds) and occasionally, lifts or pulls heavy cables and equipment weighing more than 23 kilograms (50 pounds) with the help of weight handling equipment or with assistance from other workers. Works aloft on poles, at ground level, and in ground trenches or manholes. Work requires bending, stooping, climbing and standing for long periods. Must be able to distinguish colors and shades of

colors. At times, works in awkward positions and restricted spaces where coordination of hands, legs and body are needed to perform tasks.

Factor 4. Working Conditions

Employee works indoors and outdoors. Exposed to heat and noise in power plants, to extremes of weather when outside; to heat and noise when working in power plants; and to poor illumination, unpleasant odors, chemicals, and wet, slippery surfaces in manholes. There is the possibility of burns from splicer's solder, broken bones, cuts and bruises when handling tools and equipment, strains from awkward positions, and injury by falls, explosions of equipment or cables and high-voltage electric shock. They use protective devices such as ear plugs, safety hats, and nonconductive gloves and footwear.

V. CLASSIFICATION SUMMARY**In this position:**

Duty A. 100% WG-2810-10 High Voltage Electrician
Power Generating, Controlling and Distribution Systems

The classification criteria is based on the OPM job grading standard for High Voltage Electrician, WG-2810 (TS-25 dated May 1995). The criteria used for ~~Helper and intermediate jobs are OPM job grading standards for trades helper Jobs and for Intermediate Jobs (TS-3; November 1968).~~

Grade: WG-10